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South African species of *Hymenochaete* (Aphyllophorales)

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Twenty-five South African collections of *Hymenochaete* Lév deposited in the herbarium of the Plant Protection Research Institute, Pretoria, South Africa (PREM), were studied. The collections were distributed in nine taxa, namely: *H. cinnamomea, H. fasciculata, H. flavomarginata, H. leonina, H. luteo-badia, H. ochromarginata, H. pinnatifida, H. semistupposa* and *H. tabacina*. A key for the identification of the species, descriptions and illustrations are given.

Vyf en twintig Suid-Afrikaansversamelde eksemplare van *Hymenochaete* Lév gehuisves in die herbarium van die Plantbeskermingsnavorsingsinstituut, Pretoria, Suid-Afrika (PREM), is bestudeer. Die eksemplare verteenwoordig nege taxa, nl. *H. cinnamomea, H. fasciculata, H. flavomarginata, H. leonina, H. lutea-badia, H. ochromarginata, H. pinnatifida, H. semistupposa* en *H. tabacina*. 'n Sleutel vir die identifikasie van die soorte, beskrywings en illustrasies word gegee.

Keywords: Aphyllophorales, *Hymenochaete*

Introduction

Burt (1918), who studied the genus *Hymenochaete* for North America, the Caribbean and eastern South America, was the first mycologist to introduce new ideas for the study of the species, and he was also the first to use the internal anatomy of the sporocarp to separate the species into three groups.

Later, the genus was studied, in the light of modern criteria, principally by Bourdot & Galzin (1927), Telleria (1980) and Léger (1985) for Europe; Reeves & Welden (1967) for the West Indies; Escobar (1978) for the Neotropics; Rattan (1977) for India; Cunningham (1957) for Australasia; Bononi (1979) and Job (1985a, b, c) for South America; Léger (1980, 1981a, 1982) and Léger & Lanquetin (1983) for equatorial western Africa and Madagascar; and more generally by Defigio (1970).

The data concerning the genus *Hymenochaete* in South Africa are mainly the results of the studies of Wakefield & Talbot (1948), Doidge (1950) and Talbot (1951, 1958). A revision of the collections lodged in the herbarium of the Plant Protection Research Institute, Pretoria (PREM), was carried out with the aim of furnishing more information utilizing modern taxonomic criteria, concerning the South African species known up to the present.

Materials and Methods

Free-hand sections were mounted for microscopical observation in an aqueous solution of phloxine and 5% KOH solution.

The herbaria abbreviations are taken from Holmgren & Keuken (1974). When the sign ! is given after the herbarium abbreviation it indicates the type material therein lodged has been studied personally.

Colours are from Maerz & Paul (1930).

Results

The collections were distributed in nine taxa; of which *H. cinnamomea, H. flavomarginata* and *H. leonina*, proved new for South Africa.

1. H. cinnamomea *(Pers.) Bres.*, I.R. Acad. Agiati Atti III. 3: 110. 1897 (Figure 1).

Thelephora cinnamomea Pers., Mycol. Eur. 1: 141. 1822.

Corticium cinnamomeum (Pers.) Fr., Epicr. 561. 1838.

Hymenochaete spreta Peck, N.Y. State Mus. Rept. 30: 47. 1879 (NYS !).

Hymenochaetella arida Karst., Bidr. Nat. Folk 48: 428. 1889 (H !).

Hymenochaetella laxa Karst., Bidr. Nat. Folk 48: 429. 1889 (H !).

Hymenochaete arida (Karst.) Sacc., Syll. Fung. 9: 228. 1891.

Hymenochaete laxa (Karst.) Sacc., Syll. Fung. 9: 222. 1891.

Hymenochaetella rudis Karst. Hedwigia 35: 173. 1896 (H !).

Hymenochaete rudis (Karst.) Sacc. Syll. Fung. 14: 218. 1899.

Isotype: Fries; Herbarium Fries; Europe (K).

Basidiocarp resupinate, adnate, velvety to waxy, cracked when older. Hymenial surface ochre (Bay pl. 7 E 11 to Cocoa pl. 7 E 12), smooth, margin thinning out, concolorous. In section 300 – 1000 µm thick (Figure 1a), stratose, ranging up to 6 strata; each composed of a setigerous layer with 1 – 4 rows of setae, and of a hyphal layer of loosely interwoven hyphae 60 – 100 µm thick, free of setae. Hyphae septate, branched at right angles, 2 – 3 µm diam. Cortex absent. Setae lanceolate to aculeate, naked or ensheathed, 60 – 115 × 5 – 7 µm, projecting up to 60 µm beyond the hymenium. Hymenium composed of basidia and basidioles; basidia subclavate 14 – 18 × 4 – 6,5 µm, with 4 curved sterigmata each. Spores suballantoid 4,5 – 6 × 2,5 – 3,5 µm, smooth, hyaline (Figure 1b).

Material studied: Pietermaritzburg, Natal, leg. W.G. Rump, XII.1943 (PREM 39196); ibid., II.1944 (PREM 35418); Isipingo Beach, Natal, leg. W.G. Rump, 1944 (PREM 36851 as *H.* sp.); Umgeni Bush, Durban, leg. W.G. Rump, 1935 (PREM 41754 as *H.* sp.).

Remarks: The South African collections of *H. cinnamomea* present filiform paraphyses which stand out up to 50 µm over the hymenial surface, as do the European and Australian collections of the species (Cunningham 1957). These paraphyses are fewer or absent in the South American collections of *H. cinnamomea* (Job 1985b).

2. H. fasciculata *Talbot apud Wakefield & Talbot* in Bothalia 4: 943. 1948 (PREM !) (Figure 2).

Holotype: W.G. Rump 220; Town Bush, Pietermaritzburg, Natal, South Africa; October 1934 (K); isotype PREM 28297.

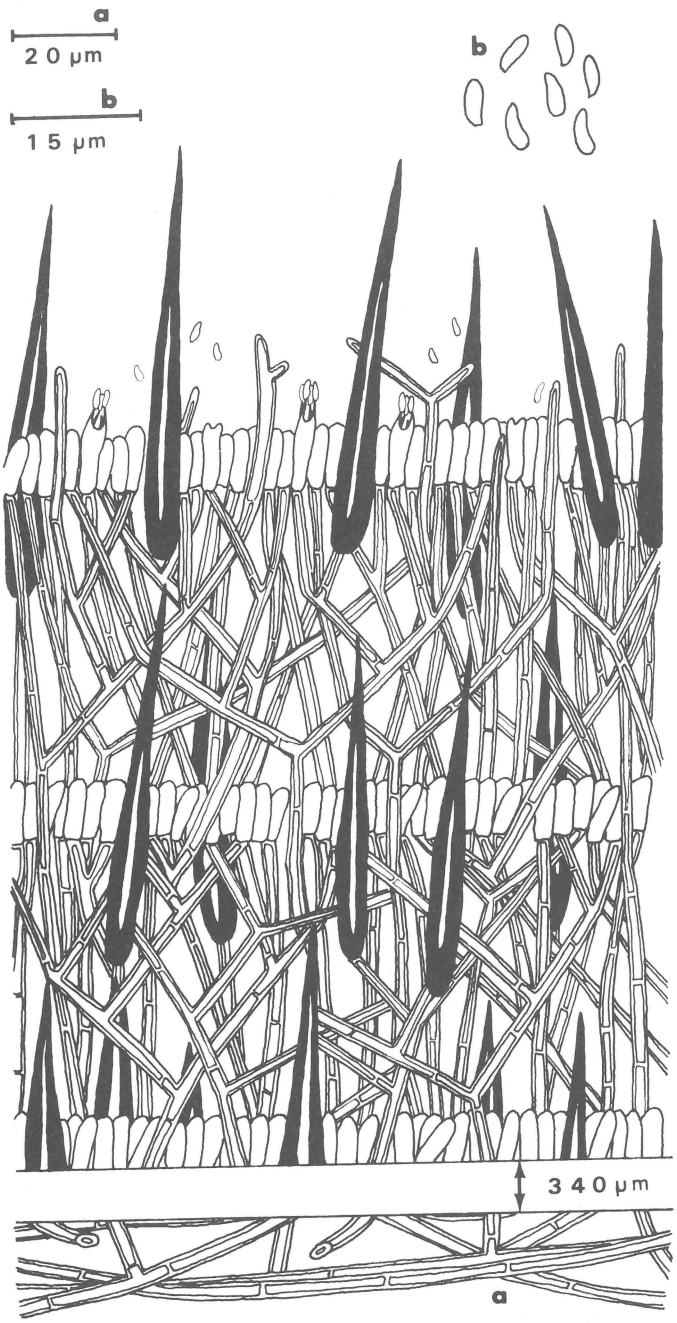

Figure 1 Microscopic characters of *Hymenochaete cinnamomea*; (a) cross section through the basidiocarp (arrow in the middle portion indicates thickness), (b) spores.

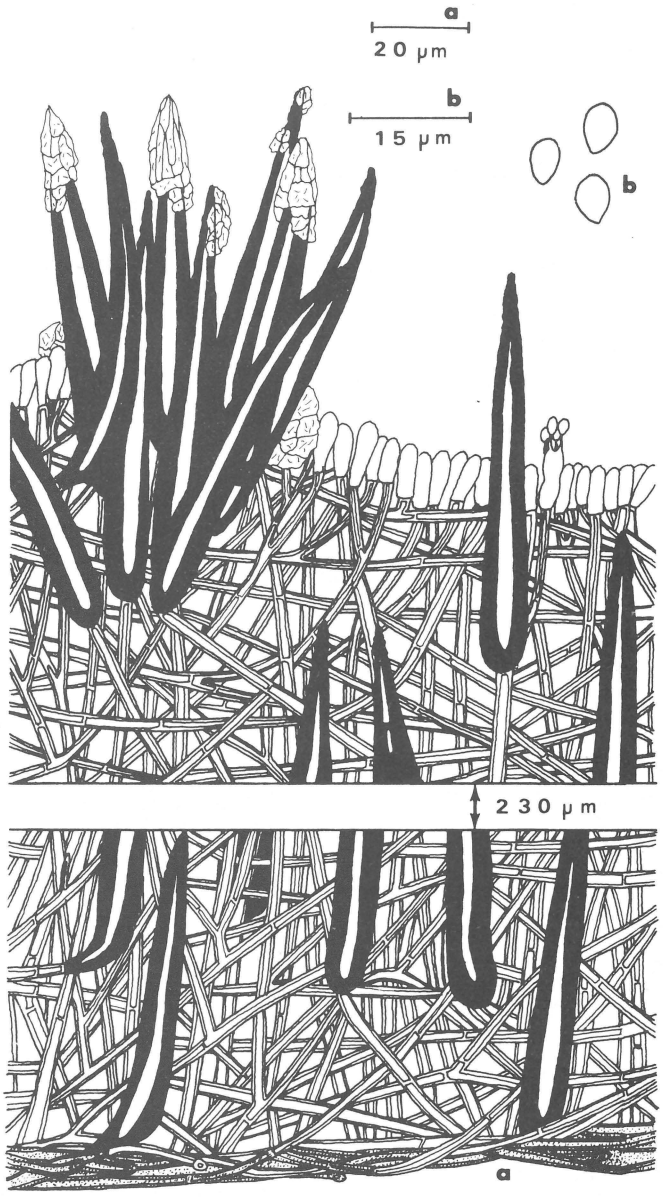

Figure 2 Microscopic characters of *Hymenochaete fasciculata*; (a) cross section through the basidiocarp (arrow in the middle portion indicates thickness), (b) spores.

Basidiocarp resupinate, adnate, membranous, colliculose, cracked, with setae arranged in tuberculate fascicles; hymenial surface umber (Cocoa Brown pl. 15 C 11), margin thinning, adnate, concolorous. In section up to 400 µm thick (Figure 2a), tightly interwoven cortex present. Context interwoven, hyphae branched 1,5 – 3 µm diam. Setigerous layer starting from the cortex and present throughout the context in 3 to 5 rows. Setae aculeate 66 – 98(– 110) × 7 – 9(– 11,5) µm, bending, solitary or in conspicuous fascicles of 6 to 12 (especially at the papillae), with slightly verruculose apices encrusted with crystals, naked or ensheathed, projecting up to 80 µm beyond the hymenium; crystals also present in the context. Basidia urniform 14 – 18 × 5 – 6 µm; basidioles globose 12 – 16 × 3 – 5 µm. Spores ovate to broadly suballantoid 5 – 6 × 3,7 – 5 µm, smooth, hyaline (Figure 2b).

Material studied: Town Bush, Pietermaritzburg, Natal, leg. W.G. Rump, X.1934 (PREM 28297, Isotype); ibid. (PREM 28500); Donnybrook, Natal, leg. M. Doidge, II.1935 (PREM 28932).

Remarks: Talbot (1951) did not find spores and basidia in the type. Defigio (1970) found urniform basidia 14 – 18 × 5 – 6 µm and ovate spores 5 – 6 × 4 – 5 µm in the isotype. I have found both in the isotype and in the collection PREM 28932 ovate to broadly suballantoid spores 5 – 6 × 3,7 – 5 µm. In the three collections studied, the hymenium is in a very poor condition, the basidia are very scarce and weathered. The basidia measurements and morphology are those recorded by Defigio (op. cit.).

Three species with fasciculate setae have been described: *H. fasciculata, H. dictator* Cunn. (PDD !) (in Trans. Royal Soc. New Zeal. 85: 32. 1957) and *H. lictor* Petch (in Ann. Roy. Bot. Gard. Perad. 9: 27. 1925). The first differs from *H. dictator* macroscopically by the different colour of the surface (Sudan Brown pl. 14 L 12 in *H. dictator*), and microscopically by having larger setae with apices encrusted (40 – 80 × 6 – 9 µm in *H. dictator*) and by the different

structure of the cortex. *H. fasciculata* differs from *H. lictor* in having the setigerous layer starting from the cortex, encrusted setae, crystals in the context and conspicuous fascicles of 6 to 12 setae (whereas *H. lictor* has a smaller number of setae in fascicles, up to six).

3. H. flavomarginata Pat. Bull. Soc. Myc. 8: 118. 1892 (FH !) (Figure 3).

Holotype: Patouillard Herbarium No 3021; Rio Mochangaro, Ecuador (FH).

Basidiocarp resupinate, adnate, membranous. Hymenium smooth to slightly colliculose, ochre (Bronze pl. 14 L 8), margin thinning, concolorous. In section up to 120 µm thick (Figure 3a). Hyphae loosely interwoven, 3 – 3,5 µm diam. freely branched and septate. Cortex absent. Setigerous layer resting on the substrate, composed of 1 or 2 rows of setae with acuminate apices. Setae lanceolate to aculeate 70 – 120 (– 130) × 6 – 8(– 9) µm, naked, some of them with the shape of an inverted T, projecting up to 100 µm beyond the hymenium. Crystals present in the context. Hymenium composed of basidia and basidiola. Basidia suburniform 14 – 18 × 4 – 6 µm, sterigmata arquate; basidiola subglobose. Spores oblong-elliptic to broadly suballantoid 6 – 8 × 2,6 – 4 µm, smooth and hyaline (Figure 3b).

Material studied: Eshowe, Zululand, leg. Mrs. Laughton, XI.1941 (PREM 33351 as *H.* sp.).

Remarks: This species is very similar to *H. contiformis* Cunn. (PDD !) (in Trans. Royal Soc. New Zeal. 85: 41. 1957) and *H. pratensis* Viégas (IACM !) (in Bragantia 5: 261. 1945). Their basidiocarps are ochre, adnate, very thin and their spores are characteristically oblong-elliptical and have very large setae seated directly on the substrate. *H. flavomarginata* differs from the others in the size of spores and setae (5 – 6 × 2,8 – 4 µm and 50 – 60 × 6 – 8 µm, respectively for *H. pratensis* and 8 – 9 × 3,5 – 4,5 µm and 95 – 190 × 8 – 12 µm, respectively for *H. contiformis*).

4. H. leonina *Berk. & Curt.*, Linn. Soc. Bot. J. 10: 334. 1868 (FH !) (Figure 4).

Isotype: C.G. Wright 532, Cuba (FH).

Basidiocarp resupinate, velvety, separable from the substrate. Hymenium smooth, brownish-grey (Arizona pl. 13 E 6), margin thinning out, sometimes becoming detached, golden (Antique gold pl. 12 L 8). In section 100 – 700 µm thick (Figure 4a). Cortex present, composed of densely compacted darkened hyphae, mainly inside the context and dividing the latter into 2 layers of more or less the same thickness. Setigerous layer seated on the context, composed of 1 or 2 rows of regulary spaced setae. Setae lanceolate 55 – 85 × 6 – 9 µm, naked or ensheathed, projecting up to 60 µm beyond the hymenium. Hymenium composed of basidia and basidiola. Basidia clavate 14 – 17 × 3 – 5 µm, with 4 curved sterigmata each. Spores allantoid to suballantoid 4 – 6 × 3 – 5 µm, smooth, hyaline (Figure 4b).

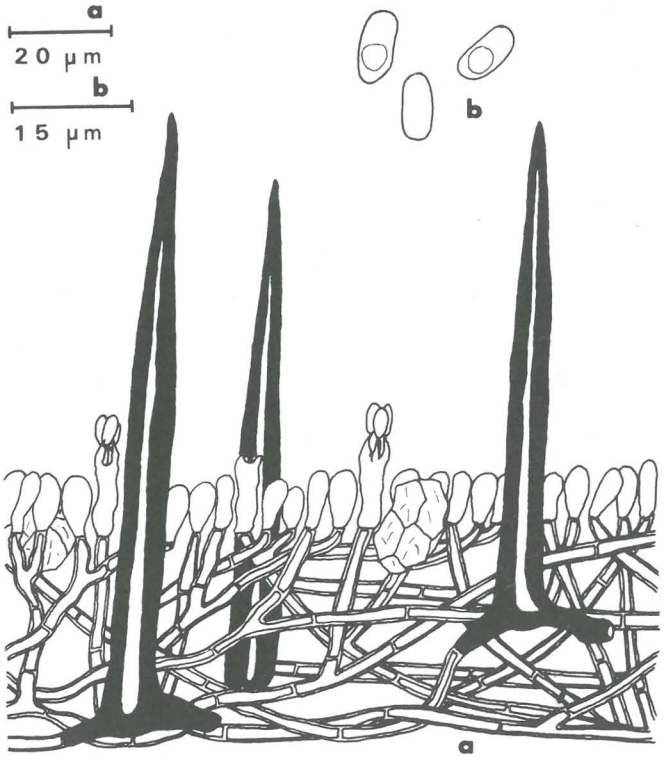

Figure 3 Microscopic characters of *Hymenochaete flavomarginata*; (a) cross section through the basidiocarp, (b) spores.

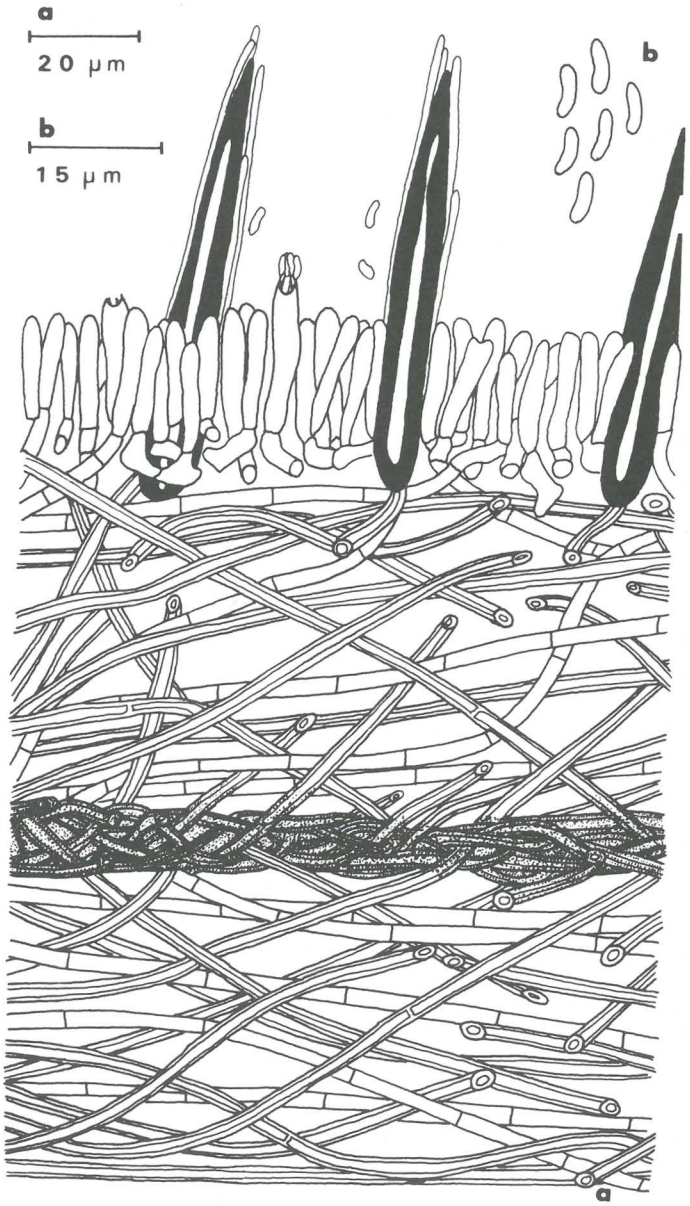

Figure 4 Microscopic characters of *Hymenochaete leonina*; (a) cross section through the basidiocarp, (b) spores.

Material studied: Umlalazi, Nature Reserve, Duna Forest, Natal, leg. J.G. Ferreira, 28.VI.1984 (PREM 47507).

Remarks: The material studied was sterile, but the presence of a median cuticular layer which characterizes *H. leonina* and the coincidence of the remaining features with those corresponding to the species, allowed its identification.

The size and morphology of the spores are according to Job (1985b).

5. H. luteo-badia *(Fr.) von Höhnel & Litschauer,* K. Akad. Wiss. Wien Sitzungesber. 116: 754. 1907 (Figure 5).

Thelephora luteo-badia Fr., Linnaea 5: 526. 1830.

Thelephora kunzei Hooker, Bot. Misc. 2: 163. 1831.

Stereum luteo-badium Fr., Epicr. 547. 1838.

Stereum laetum Berk., Acad. Nat. Sci. Phila. J. 2: 279. 1853 (PC !).

Hymenochaete laeta (Berk.) Berk. Grevillea 8: 146. 1880.

Hymenochaete kunzei (Hooker) Massee, Linn. Soc. Bot. J. 27: 100. 1890.

Hymenochaete pavonia Pat., Philipp. Journ. Sci. 86. 1915 (FH !).

Hymenochaete cubensis Burt, Ann. Mo. Bot. Gard. 5: 337. 1918 (NY !).

Hymenochaete reflexa Burt, Ann. Mo. Bot. Gard. 5: 336. 1918 (NY !).

Paratype: Weigelet MO 5250; Dutch Guiana, under the name *Thelephora luteo-badia* and *Thelephora kunzei* (BPI).

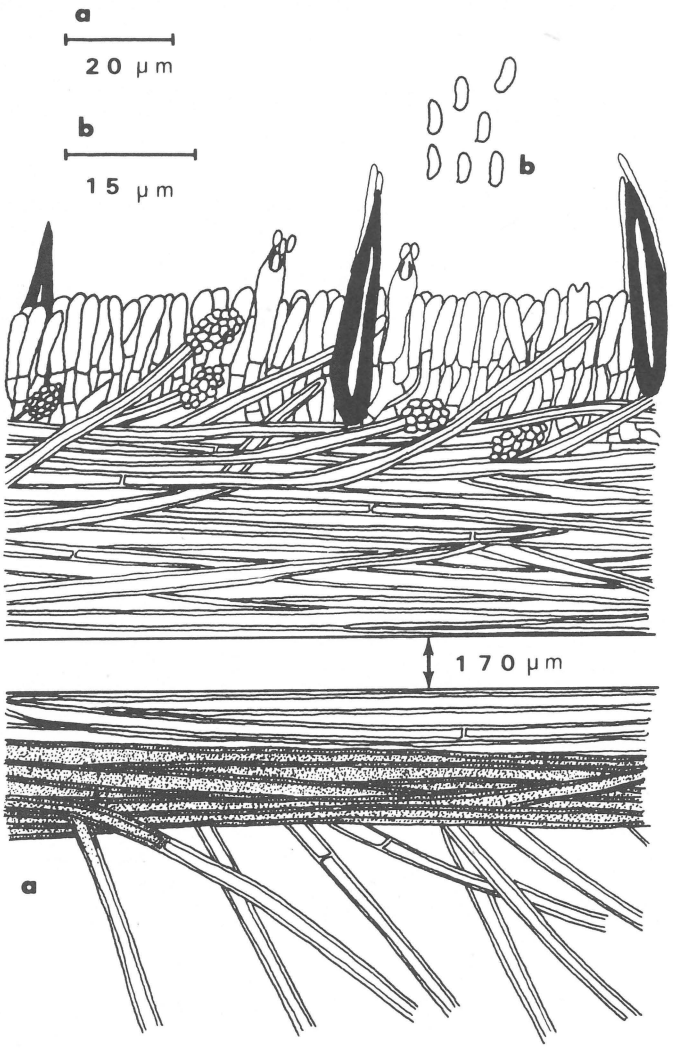

Figure 5 Microscopic characters of *Hymenochaete luteo-badia*; (a) cross section through the basidiocarp (arrow in the middle portion indicates thickness), (b) spores.

Basidiocarp demediate and imbricate, or effuso-reflexed, coriaceous, thin. Pileus up to 4 cm diam., velvety when young, becoming glabrous and fibrillose when older. Adaxial surface brown (Pablo pl. 12 G 7 to Whippet pl. 15 L 10), concentrically sulcate, zonate. Hymenium smooth, greyish-orange (pl. 12 L 6), margin thinning out, concolorous, rarely whitish-orange (Ta Ming pl. 10 L 6). Pileal trama 200 – 400 µm thick (Figure 5a). Cortex present, 30 – 60 µm thick, composed of darkened, densely compacted hyphae, that give rise to a dense layer of abhymenial hairs. Context composed of a well-developed, compact layer of longitudinally arranged hyphae, 2,5 – 3 µm diam. Setigerous layer seated on the context, composed of a single row of widely spaced setae, rarely 2 – 5 rows of setae. Setae very few, lanceolate 30 – 50 × 5 – 7 µm, ensheathed, projecting up to 30 µm beyond the hymenium. Hymenium composed of paraphysate hyphae, basidia and basidioles. Paraphysate hyphae 2 – 3 µm diam., encrusted at the tip with small brown crystals. Basidia clavate 14 – 18 × 4 – 5 µm. Spores suballantoid 4 – 5 × 1,8 – 2,5 µm, smooth, hyaline (Figure 5b).

Material studied: Ngoye, Natal, leg. W. Haygarth, 11.V.1916 [PREM 15558 as *H. nigricans* (Lév.) Bres. (P !)]; Gingindlovu, Natal, leg. W. Haygarth, 25.V.1916 (PREM 15596); Stella Bush, Durban, Natal, leg. P. van der Bijl, 4.IX.1916 (PREM 31687); Nkandla Forest, Natal, leg. R.G. Strey, 7.V.1962 (PREM 42274).

Remarks: *H. luteo-badia* is similar to *H. villosa* (Lév.) Bres. (PC !) (in Ann. Mycol. 8: 588. 1910) and *H. dura* Berk. & Curt. (FH !) (in Linn. Soc. Bot. J. 10: 334. 1868). *H. villosa* is however quite distinct morphologically, since it has submoniliform hyphae and elliptical spores (3 – 4 × 2 – 2,5 µm). *H. dura* also differs morphologically from *H. luteo-badia*. The former is resupinate and has paraphysate dichotomic hyphae and oval to short-elliptical spores (3 – 4,5 × 2 – 2,5 µm).

6. H. ochromarginata *Talbot apud Wakefield & Talbot* in Bothalia 4: 943. 1948 (PREM !) (Figure 6).

Holotype: P.J. Pienaar No 2133, Tenadu, Tembuland, South Africa, 26 February 1912 (K), with isotype PREM 2133.

Basidiocarp effused-reflexed to pileate, velvety, imbricate, hymenial surface brown (Congo pl. 8 H 11), margin thinning, golden brown. Abhymenial surface corrugated, ochraceous (Tan pl. 12 L 11), concentrically sulcate with a few black bands. In section 400 – 1200 µm thick (Figure 6a); context well developed, duplex (Reeves & Welden 1967). Cortex present, compact, formed by thick-walled intertwined and cemented hyphae. Setigerous layer seated on the context, up to 600 µm thick, formed by 5 – 15 rows of densely arranged setae. Setae 26 – 46 × 5 – 7 µm, with acuminate apices, ensheathed, standing out up to 30 µm over the hymenium. Hymenium composed of basidia and basidioles. Basidia suburniform 12 – 16 × 3 – 5 µm, with 4 curved sterigmata each. Spores oblong-elliptical 3 – 4 × 2 – 3 µm, smooth, hyaline (Figure 6b).

Material studied: Tenadu, Tembuland, leg. P.J. Pienaar, 26.II.1912 (PREM 2133, Isotype); Vredehuis, Arcadia, Pretoria, leg. M. Doidge, 14.IV.1913 (PREM 6672); Drakensberg, Natal, leg. Bottomley, 20.VII.1937 (PREM 28879); Donnybrook, Natal, leg. M. Doidge, 1936 [PREM 30260 as *H. rubiginosa* (Fr.) Lév.]; Newswl beach, Natal, leg. W.G. Rump, XII.1946 (PREM 35558).

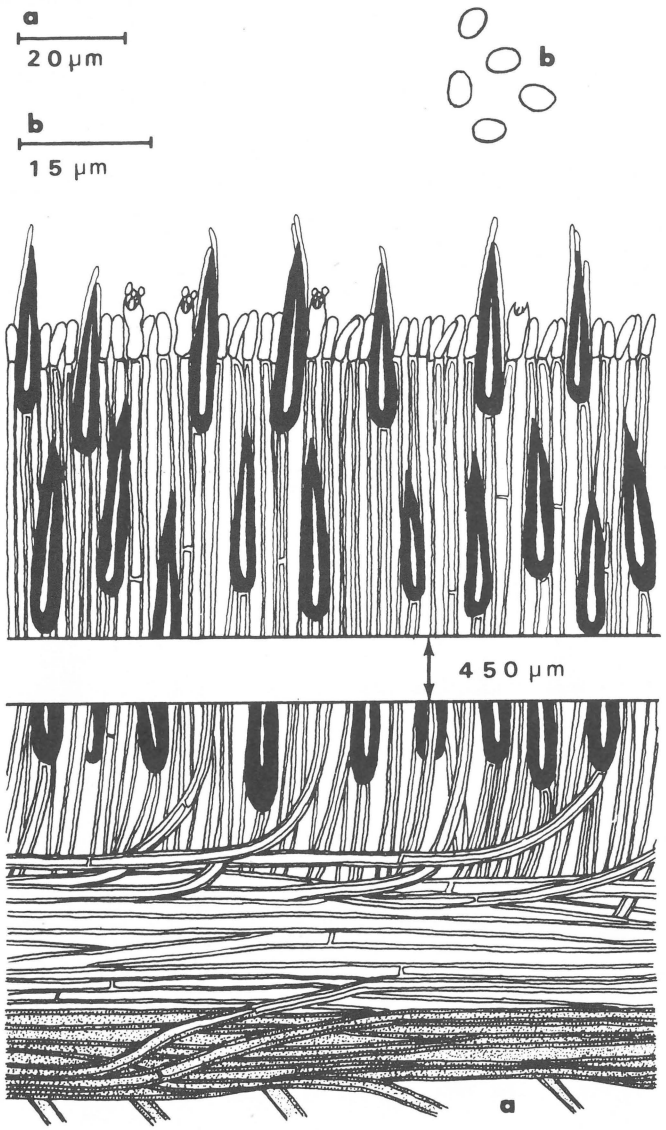

Figure 6 Microscopic characters of *Hymenochaete ochromarginata*; (a) cross section through the basidiocarp (arrow in the middle portion indicates thickness), (b) spores.

Remarks: *H. ochromarginata* is similar to *H. rigidula* Berk. & Curt. (PC !) (in Linn. Soc. Bot. J. 10: 334. 1868) and *H. rubiginosa* (Fr.) Lév. (in Ann. Sci. Nat. III 5: 151. 1846), both having a duplex context, cortex and a densely setigerous layer seated on the context. *H. rubiginosa* is distinguished by its longer setae (30 – 70 µm), and its colliculose, coriaceous, bistre, basidiocarp. *H. rigidula* is similar macro- and microscopically to *H. ochromarginata*, but the former species has larger, naked, setae, (35 –)45 – 60(– 80) × (7 –)9 – 10 µm, with slightly verruculose encrusted apices, and allantoid to suballantoid spores.

Talbot (1951) did not report either basidia or spores in the type specimen, but I have found spores (oblong-elliptical) and basidia (suburniform) in the same material.

7. H. pinnatifida *Burt*, Ann. Mo. Gard. 5: 355. 1918 (NY !) (Figure 7).

Paratype: F.S. Earle and W.A. Murrill No 6 and 31; Havanna Province, Managua, Cuba (NY).

Basidiocarp resupinate, waxy to velvety, cracked when older. Hymenium smooth, brownish-grey (Hispano pl. 14 D 12 to pl. 3 D 7), margin thinning out, concolorous. In section

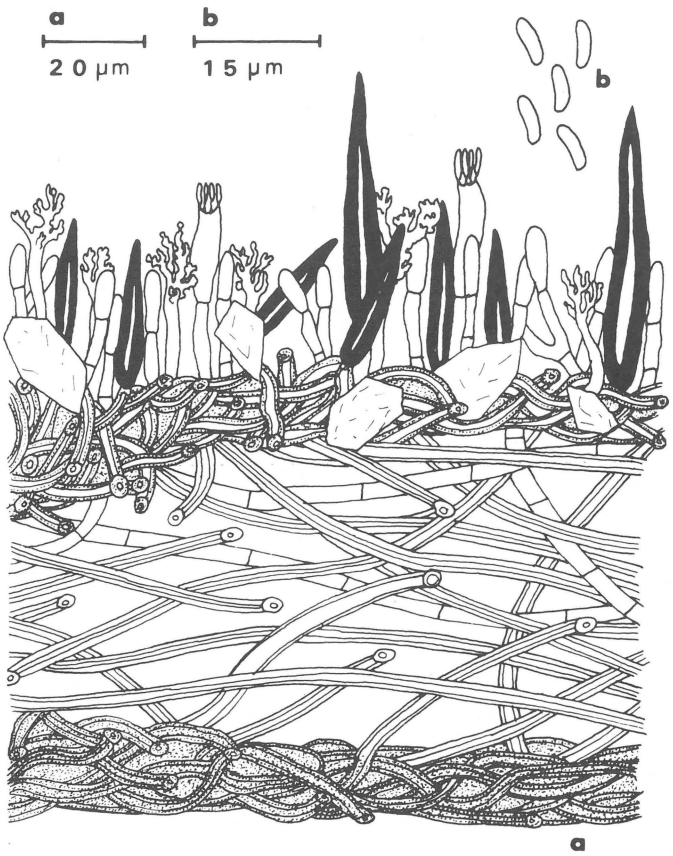

Figure 7 Microscopic characters of *Hymenochaete pinnatifida*; (a) cross section through the basidiocarp, (b) spores.

100 – 350 µm thick (Figure 7a), rarely stratose (Léger 1981b). Context composed of interwoven, 2,5 – 3 µm diam. hyphae, with parallel orientation. Cortex present, composed of darkened, densely compacted hyphae. Setigerous layer seated on the context 30 – 100 µm thick, rarely up to 250 µm, composed of numerous setae arranged in 8 – 10 rows. Setae lanceolate, 15 – 50 × 3 – 7 µm, naked or ensheathed, projecting up to 40 µm beyond the hymenium. Crystals also present in the subhymenial area. Hymenium composed of dendrophyses, basidia and basidioles. Basidia clavate, 12 – 16 × 3 – 4,5 µm. Spores suballantoid 4 – 5,5 × 1,5 – 2,5 µm, smooth, hyaline (Figure 7b).

Material studied: Table Mountain, Natal, leg. W.G. Rump, VI.1935 [PREM 34356, 34386 both as *H. fulva* Burt (NY !)]; Hluhluwe Game Reserve, Zululand, Natal, leg. W.G. Rump, X.1935 (PREM 35325 as *H. fulva*).

Remarks: Collections 34356 and 34386 have basidia and mature spores; nevertheless, both collections do not have dendrophyses over the hymenial layer, but very few developed dendrophyses were observed in the subhymenial layer. This might be indicative of a young state of growth (J.C. Léger, University C. Bernard, Lyon, personal communication). Since all the other characteristics are in agreement with those of the species, these collections are considered to be *H. pinnatifida* in spite of exhibiting an abnormal development.

8. H. semistupposa *Petch*, Ann. Royal Bot. Gard. Peradeniya 9: 278. 1925 (Figure 8).

Isotype: Herb. Perad. No 5627, Hakgala, Ceylon (K).

Basidiocarp resupinate, loosely attached when moist, cracked when older. Hymenial surface irregulary tuberculate, yellow-

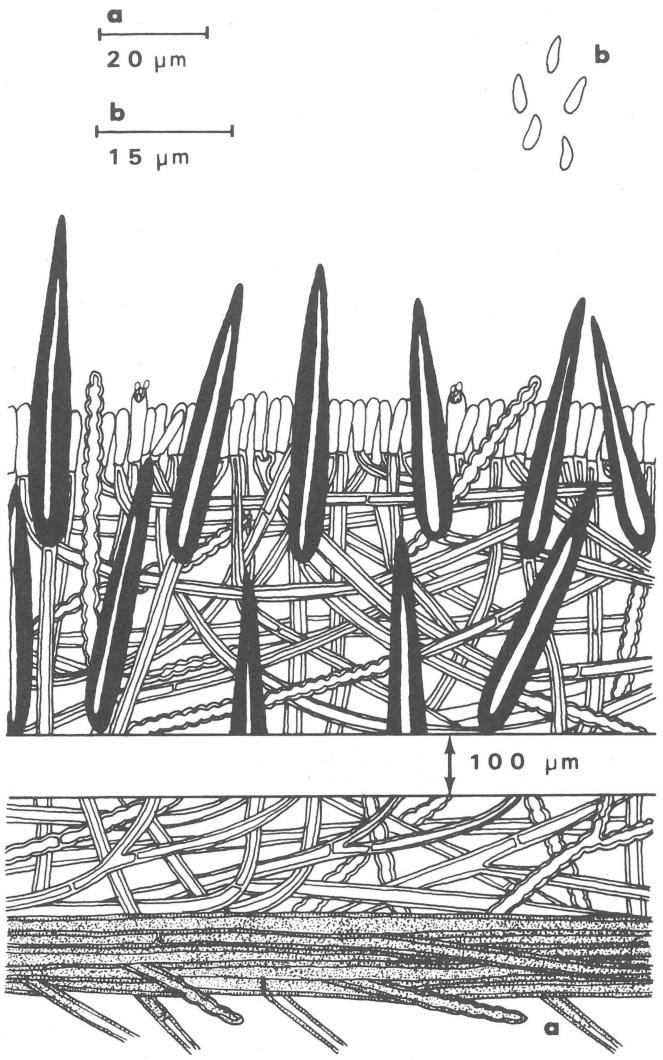

Figure 8 Microscopic characters of *Hymenochaete semistupposa*; (a) cross section through the basidiocarp (arrow in the middle portion indicates thickness), (b) spores.

brown (Mummy pl. 14 J 9 to Bronze pl. 14 L 9), margin thinning out, adnate, cinnamon (Buckthorn pl. 13 L 8). In section 100 – 330 µm thick, (up to 900 µm thick in stratose specimens). Context composed of interwoven, dark yellow, septate, branched hyphae (Figure 9a), many of them submoniliform. Cortex composed of interwoven, deeply coloured, cemented hyphae, and abhymenial hairs. Setigerous layer to 200 µm deep (up to 500 µm in stratose specimens), composed of 2 – 5 rows of setae. Setae fusiform, 40 – 70 × 6 – 9 µm, naked or ensheathed, projecting up to 50 µm beyond the hymenium. Hymenium composed of basidia, basidiola and occasional moniliform paraphysate hyphae. Basidia subclavate, 12 – 16 × 3,5 – 4 µm. Spores suballantoid 3,5 – 5 × 1 – 1,25 µm, smooth, hyaline (Figure 8b).

Material studied: Krantzkop, Natal, leg. W.G. Rump, XI.1935 (PREM 30232); Karkloof, Natal, leg. W.G. Rump, 1944 (PREM 35315); Nkandlha Forest, Natal, leg. R.G. Strey, 7.V.1962 (PREM 42278).

Remarks: In the three species studied I have not seen spores and basidia. The measurements and morphology recorded are those given by Cunningham (1957).

9. H. tabacina *(Sow.:Fr.) Lév.*, Ann. Sci. Nat. III. 5: 152. 1846 (NY !) (Figure 9).

Auricularia tabacina Sow., British Fungi 25. 1797.

Thelephora tabacina (Sow.) Fr., Syst. Myc., 1: 437. 1821.

Thelephora avellana Fr., Syst. Myc., 1: 442. 1821.

Stereum tabacinum (Sow.) Fr., Epicrisis 550. 1838.

Stereum avellanum Fr., Epicrisis 551. 1838.

Hymenochaete avellana (Fr.) Cke., Grev. 8: 146. 1880.

Hymenochaete obesa Cunn., Trans Royal Soc. New Zeal. 85: 15. 1957 (PDD !).

Neotype: W.B. Cooke; White Bird Summit, Mt. Idaho, Idaho; June 13, 1948 (NY), selected by Defigio (1970).

Basidiocarp resupinate, effused-reflexed to pileate. Pileus up to 1 cm diam., rarely imbricate, thin, coriaceous. Abhymenial surface finely tomentose to glabrous, concentrically zonate and sulcate; when dry light to dark brown (Cinnamon pl 12 E 7 to Raw Umber pl 15 L 12). Hymenial surface smooth,

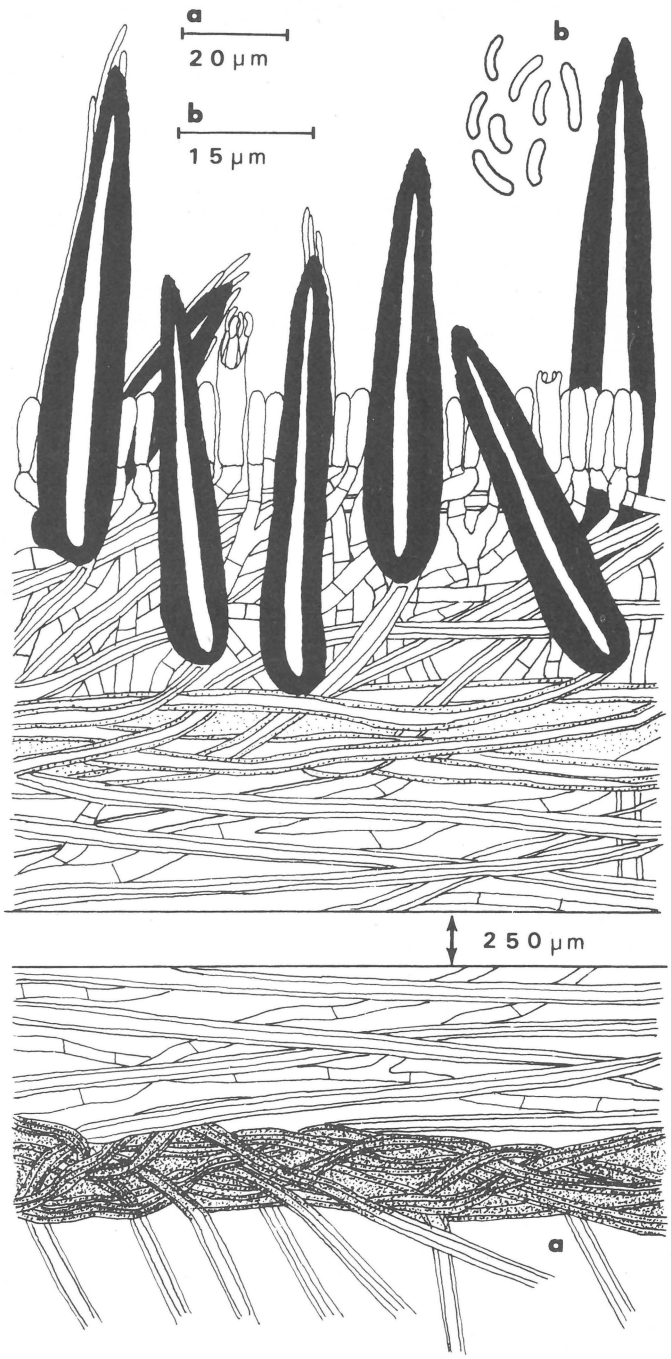

Figure 9 Microscopic characters of *Hymenochaete tabacina*; (a) cross section through the basidiocarp (arrow in the middle portion indicates thickness), (b) spores.

concentrically cracked when older, greyish-brown (Buffalo pl 15 I 11). Margin thinning out, concolorous or pale orange (Chrome 10 K 12). In section 200 – 600 µm thick (Figure 9a). Cortex present 20 – 40 µm thick, composed of cemented, darkened, densely interwoven hyphae. Abhymenial hairs present. Setigerous layer composed of one row of spaced setae, or otherwise attaining 100 – 200 µm deep and composed of 3 – 4 rows of setae. Setae lanceolate (60 –)80 – 120(– 140) × 9 – 16(– 18) µm, naked or ensheathed, with slightly verruculose apices encrusted with crystals, projecting up to 70 µm beyond the hymenium. Hymenium composed of basidia and basidioles. Basidia subclavate 11 – 16 × 4 – 6 µm, with 4 curved sterigmata each. Spores allantoid 5,5 – 7,5 × 1,3 – 2 µm, smooth, hyaline (Figure 9b).

Material studied: Town Bush, Pietermaritzburg, Natal, leg. W.G. Rump, X.1934 (PREM 28287); ibid, XII.1943 (PREM 35320 as *H. pinnatifida*).

Remarks: *H. tabacina* is widespread (Parmasto 1985), and widely distributed in the northern temperate zones of the world, but is seldom found in the Neotropics (Escobar 1978).

I propose to synonymize *H. obesa* with *H. tabacina* since I consider that the features described by Cunningham (1957) to differentiate them, namely '*H. obesa* differs from *H. tabacina* in that setae are less crowded, appear in fewer rows, are shorter, broader (65 – 95 × 10 – 16) and with wide lumina' are within the range of variation of size and disposition of setae in *H. tabacina*.

The nine species of *Hymenochaete* represented in the PREM herbarium can be separated according to the following key:

1. Well-developed context present; setigerous layer seated on context. ..... 2.
1′. Well-developed context absent or reduced to a very thin zone of cemented or interwoven hyphae. Setigerous layer seated directly on substrate. ..... 8.
2. Cuticule absent, trama generally stratified, formed by 2 or more strata. ..... 1. ***H. cinnamomea***
2′. Cuticule present. ..... 3.
3. Basidiocarp divided into two zones of equal thickness by a cuticule of interwoven hyphae. ..... 4. ***H. leonina***
3′. Cuticule basal, originating or not abhymenial hairs, but not dividing the basidiocarp in two equal zones. ..... 4.
4. Setae up to 70 µm long. Spores suballantoid or oblong-elliptical, up to 5 µm long. ..... 5.
4′. Setae 80 – 120 µm long; spores allantoid 5,5 – 7,5 µm long. ..... 9. ***H. tabacina***
5. Hymenial paraphyses present. Spores suballantoid. Context simple. ..... 6.
5′. Hymenial paraphyses absent. Spores oblong-elliptical. Context duplex. ..... 6. ***H. ochromarginata***
6. Basidiocarp pileate, filiform, encrusted paraphyses present. Context of longitudinally arranged hyphae. ..... 5. ***H. luteo-badia***
6′. Basidiocarp resupinate, paraphyses moniliform or dendrophysoid. Context interwoven. ..... 7.
7. Paraphyses dendrophysoid; setae 15 – 50 µm long. ..... 7. ***H. pinnatifida***
7′. Paraphyses moniliform; setae 40 – 70 µm long. ..... 8. ***H. semistupposa***
8. Basidiocarp ochre, up to 120 µm thick; setae solitary. Spores 6 – 8 µm long. ..... 3. ***H. flavomarginata***
8′. Basidiocarp umber, up to 400 µm thick; setae arranged in conspicuous fascicles of 6 to 12. Spores 5 – 6 µm long. ..... 2. ***H. fasciculata***

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